

REMARKS

Claims 1-25 were pending in this application. Claim 26 has been newly added. No claims have been canceled. Hence, claims 1-26 are now pending in this application.

Independent claims 1, 12, 19, and 22 were amended to clarify that the sequence of codebook identifications is **pre-determined** as well as **signal block independent**. Support for this amendment may be found throughout the application in general and at least on page 5, lines 23-24, and page 6, lines 20-21 and 27-29.

Independent claim 26 was added to more fully capture the scope of the invention. Support for this claim may be found throughout the application in general and at least on page 5, lines 23-24, and page 6, lines 20-21 and 27-29.

No new matter was added.

Claim Rejections

Claims 1-3 and 6-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Discrete-Time Processing of Speech Signals by Deller et al. ("Deller") in view of U.S. Patent No. 6,122,608 to McCree ("McCree") and further in view of U.S. Patent No. 5,778,335 to Ubale et al. ("Ubale").

Claims 4-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the cited combination and further in view of U.S. Patent No. 6,055,496 to Heidari et al. ("Heidari").

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,991,717 to Minde et al. ("Minde") in view of McCree and further in view Ubale.

To the extent the rejections may be considered to apply to the amended claims, these rejections are respectfully traversed.

The Claimed Invention

The present invention, as recited in amended claim 1, is directed to a multi-codebook fixed bitrate CELP signal block encoding/decoding method. The method comprises the step of selecting, for each signal block, a corresponding excitation codebook identification from a **pre-determined, signal block independent** sequence of codebook identifications. The method further comprises step of encoding/decoding each signal block by using an excitation codebook having the selected excitation codebook identification.

Independent claim 12 is directed to a multi-codebook fixed bitrate CELP signal block encoder/decoder. The encoder/decoder includes an excitation codebook selector for selecting, for each signal block, a corresponding excitation codebook identification from a **pre-determined, signal block independent** sequence of codebook identifications. The encoder/decoder further includes means for encoding/decoding each signal block by using an excitation codebook having the selected excitation codebook identification.

Independent claim 19 is directed to an excitation codebook selection method for multi-codebook fixed bitrate CELP signal block encoding/decoding. The method comprises step of selecting, for each signal block, a corresponding excitation codebook identification from a **pre-determined, signal block independent** sequence of codebook identifications, the codebook identification identifying a particular excitation codebook.

Independent claim 22 is directed to a codebook selection apparatus for multi-codebook fixed bitrate CELP signal block encoding/decoding. The apparatus includes an excitation codebook selector for selecting, for each signal block, a corresponding excitation codebook identification from a **pre-determined, signal block independent** sequence of codebook

identifications, the excitation codebook identification identifying a particular excitation codebook.

Claim 26 is directed to a multi-codebook fixed bitrate CELP signal block encoding/decoding method. The method comprises the step of selecting, for each signal block, a corresponding excitation codebook identification from a **pre-coordinated, signal block independent** sequence of codebook identifications. The method further comprises step of encoding/decoding each signal block by using an excitation codebook having the selected excitation codebook identification.

Arguments in Support of the Claims

As an initial matter, Applicants kindly thank the Examiner for the courtesy of a telephonic interview on July 2, 2003. During said interview, Applicants attempted to clarify the distinctions between the claimed invention and cited prior art references. The Examiner requested that those clarifications be made of record through the filing of this response. If after reviewing this response the Examiner still has concerns about the allowability of the claimed invention, Applicants respectfully request that the Examiner contact Applicants' attorney at the telephone number indicated below.

Secondly, Applicants filed a supplemental Information Disclosure Statement on April 21, 2003, after the current Office Action was mailed. Applicants respectfully request that the Examiner consider the references disclosed in that Information Disclosure Statement and return an initialed copy of the statement to Applicants.

With regard to the independent claims, Applicants respectfully submit that none of the prior art references, taken alone or in combination, disclose or suggest the claimed invention.

For example, the claimed invention uses a codebook selection procedure that is based on a **pre-determined** and **signal block independent** sequence. That is, the sequence of codebooks to be used is (a) determined in advance, and (b) does not depend on any signal block. None of the prior art references disclose or suggest these two features.

The Examiner concedes that Deller, while describing CELP coding using a signal excitation codebook, does not specifically teach the use of multiple codebooks or a selection procedure for selecting one of the multiple codebooks. The Examiner contends, however, that McCree teaches the use of multiple codebooks and a codebook selection procedure that is signal block independent. In support of her position, the Examiner cites col. 4, lines 7-52 of McCree. From this, the Examiner concludes that it would have been obvious to modify the system of Deller to implement the codebook selection procedure of McCree to thereby arrive at the claimed invention.

Assuming for the sake of argument that there is some motivation to combine Deller and McCree, the very paragraph cited by the Examiner in McCree contradicts the Examiner's contention. For example, McCree states in col. 4, lines 40-49 that:

The measured error from the first pair of prediction matrix 1 (with mean vector 1) and codebooks set 1 is compared with prediction matrix 2 (with mean vector 2) and codebook set 2. The set of indices for the *codebooks with the minimum error* is gated at gate 37 out of the encoder as encoded transmission of indices and a bit is sent out at terminal 38 from control 29 indicating from which pair of prediction matrix and codebooks set the indices was sent (codebook set 1 with mean vector 1 and predictor matrix 1 or codebook set 2 and prediction matrix 2 with mean vector 2).

As can be seen, McCree teaches comparing the codebooks against one another and selecting the codebook that results in the minimum error. Thus, far from teaching a **pre-determined** sequence of codebooks, McCree actually teaches determining the codebook *while the signal block is being processed* in order to determine which one results in the minimum error.

Moreover, McCree teaches a codebook selection procedure that is not entirely signal block independent. McCree states in the last sentence of the cited paragraph (col. 4, lines 49-53) that:

The mean-removed quantized vector from adder 31 associated with the minimum error is gated at gate 33a to frame delay 33 so as to provide the previous mean-removed quantized vector to multiplier 26.

This previous mean-removed quantized vector is then used by McCree to determine the quantization vector in the next frame. See McCree, col. 3, lines 49-53; col. 4, lines 14-18. Thus, McCree teaches using information (i.e., the quantized vector) from a previous signal block to select the codebook (i.e., quantization vector) for the next signal block. Therefore, contrary to the Examiner's assertions, McCree teaches a signal block *dependent* codebook selection procedure. That is, the selection procedure in McCree is *dependent* on information from a previous signal block.

As for Ubale, this reference appears merely to teach an encoding and decoding method that uses multiple band fixed excitations.

As for Minde, this reference appears merely to teach a linear predictive speech encoder that uses an adaptive codebook for generating and a captive excitation.

As for Heidari, this reference appears merely to teach a method of characterizing the excitation vector of a speech processor by dividing frames of speech into sub-frames for which suitable codevectors are generated.

Accordingly, because none of the prior art references of record disclose or suggest the claimed invention, withdrawal of the rejection against independent claims 1, 12, 19, and 22 is respectfully requested.

As for dependent claims 2-11, 13-18, 20-21, and 23-25, although they contain independently allowable subject matter, these claims depend from claims 1, 12, 19, and 22, respectively, and are therefore allowable for at least the same reasons as the independent claims.

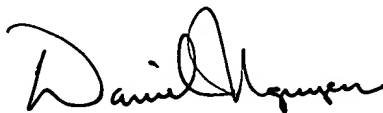
As for independent claim 26, none of the prior art references of record disclose or suggest using a codebook selection procedure that is based on a **pre-coordinated** and **signal block independent** sequence of codebooks. Therefore, allowance of this claim is respectfully requested.

CONCLUSION

The rejections raised by the Examiner have been addressed and Applicants submit the claims are now in condition for allowance, which action is respectfully requested. If any questions or issues remain and the resolution of which the Examiner feels will be advanced by a conference with the Applicants' attorney, the Examiner is invited to contact the attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 10-0447, reference 44559.3 (DGN).

Respectfully submitted,



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7/7/03

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